SCIENCE OF SOUND

Developed by Ric Chamberlin and Sarah Powers
Sum'Arts for Kids 2016
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Summary:
Students will explore the science behind sound; why and how it happens, what makes pitch and tone, and how different materials produce different sounds.

Grades: K - 2nd grade

Time Frame:
Five days, approximately 90 minutes per day.
Each daily lesson will include direct instruction, independent explorations, group activities, and a brief break/snack time.

Subject(s): Art, Music, Science

Essential Questions:
What is sound and where does it come from?

Knowledge and Skills:
Students will have a basic understanding of what sound is; it can be loud or quiet and it is made when objects are moved in some way.

Standards and Key Concepts
Standards AK Alaska Content and Performance Standards for Students
Type of Standards: Content Standards

Subject: Arts
Standard: A student should be able to create and perform in the arts.
Indicator: 1) participate in dance, drama, music, visual arts, and creative writing;
Indicator: 3) appropriately use new and traditional materials, tools, techniques, and processes in the arts;
Indicator: 5) collaborate with others to create and perform works of art

Performance Task
Students will use recycled materials to create a musical instrument that will be used to perform in a group concert at the conclusion of the lessons. Students will use their understanding of how sound is created through movement and vibration when designing their instruments as well as consider the material they are using.
Assessment/Rubrics
Students will be assessed on their design and plan to create an instrument (not on the success of construction or the sound it produces), as well as their dedication to the process of making sound/music.

Learning Experiences and Resources
Sequence of Activities

Materials and resources:
- Recycled cereal boxes (or other small cardboard boxes), recycled paper towel/toilet paper rolls, recycled glass jars, recycled yogurt/sour cream containers
- Rubber bands (various sizes)
- Masking tape (various widths), Clear tape
- Wooden craft sticks
- Wax paper
- Sand paper
- String
- Rulers
- Markers, crayons, colored pencils
- Paints and brushes
- Corn starch
- Food coloring
- Straws
- Ziplock bags

Day 1-5:
Welcome (repeat each day)
5 Minutes: allow time for students to put belongings away and visit with friends (this also provides a window for those who may be running late)
10 Minutes:
Setup the day, provide expectations and the plan for activities (what we are going to learn and why)
Exploration (repeat each day)
10 - 15 Minutes: students will explore the sounds made through different activities and materials; introduce annoying sound of the day during this time (students will be provided with different objects throughout the week to use and take home)
Gather and Focus (individual lesson each day)

Day 1:
Begin work on KWL Chart
Ask students what they know about sound; record under K
Ask students what they want to know about sound; record under W
(do not provide answers to questions or make corrections at this point)

Day 2:
Sound Experiment
Metal clothes hanger and string: Tie a piece of string to each end of the hanger, hold the string to the ears, and have partner tap the hanger. What happens?
Revisit the KWL chart and make any changes based on student input

Day 3:
Sound Experiment
Students will make a string telephone and explore how the sound travels alone the string
Revisit KWL chart and make any changes based on student input
Introduce Instrument Construction Project:
Students will make a plan (a sketch, list of materials, or verbal description based on ability)
Introduce the activity in which students will design and construct their own instrument

Day 4:
Instrument Demonstration and Instrument Construction
High school band/orchestra students demonstrate the sound produced through different instruments
Students will continue/complete the instrument they started during the previous lesson

Day 5:
Family Concert and Celebration
Families will be invited to watch a concert performed with the instruments students created
Movement Break (repeat daily with different noise making objects, music videos, songs)
10 Minutes: students will find the rhythm/beat and replicate with objects while moving about the room (get the wiggles out)

Snack/Break (repeat each day)
10 Minutes: students will eat a small snack, use the restroom, visit with friends

Gather and Focus (individual lessons each day)
Day 1: Introduction to Sound
10 Minutes: read the first 5 pages from All About Sounds / Students will explore each of the do it yourself ideas in the book
5 Minutes: Vocabulary; vibration, sound waves, frequency, echo, resonance, etc
As a group create movements that represent each word
5 Minutes: video on sound waves

Day 2: How Sound Is Made
10 Minutes: read the remaining pages in All About Sound stopping periodically to check for understanding sound demonstrations (Ric's different instruments)
5 Minutes: review vocabulary adding any new words with movements

Day 3: Building Instruments
30 Minutes: students will begin work on their instruments based on their plan and list of materials

Day 4: Building Instruments (continued)
30 Minutes: students will continue/complete their instruments

Day 5: Jam Session
Families will be invited to watch a concert put on by students using their instruments
Art (individual lessons each day)

**Day 1:** Blow Painting
Students will drop paint onto a large piece of paper and use a straw to blow the paint around.

**Day 2:** Sound Wave Painting
Students will paint different sound waves demonstrating an understanding of long and short waves, lengths and the sounds they carry.

**Day 3:** Vibration Art
Students will make oobleck experiment with dancing oobleck.

**Day 4:** Decorate their instruments
Students will paint their instruments.

**Day Five:** Family Concert
Clean up/Dismissal (repeat each day)
10 Minutes: students will clean their area of any mess and gather their belongings before leaving.

**Student Supplies:**
Noise makers (bubble wrap, slide whistles, referee whistles, whoopie cushions piano kits)